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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,222	07/24/2006	Mitsuyuki Fujisawa	JFE-06-1205	8264

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IP GROUP OF DLA PIPER LLP (US)
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EXAMINER	
VELASQUEZ, VANESSA T	
ART UNIT	PAPER NUMBER
1733	

NOTIFICATION DATE	DELIVERY MODE
04/01/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pto.phil@dlapiper.com

Office Action Summary	Application No.	Applicant(s)	
	10/587,222	FUJISAWA ET AL.	
	Examiner	Art Unit	
	Vanessa Velasquez	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 January 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-16,18 and 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-16,18 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 1-11, 17, and 20 are canceled. Claims 12-15 are amended. Claims 12-15 are independent. Currently, claims 12-16, 18, and 19 are pending and presented for examination on the merits.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 12, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Espy (US 3,736,131).

Regarding claims 12 and 15, Espy discloses a dual-phase austenitic-ferritic steel comprising the following elements (abstract; col. 2, lines 6-24):

Element	Claim 12	US 3,736,131 (Heat No. E)	US 3,736,131
C	about 0.2 or less	0.020	up to about 0.06
Si	about 4 or less	0.38	up to 1.0 maximum
Mn	about 10 or less	5.96	about 4 to less than 11.0
P	about 0.1 or less	0.004	impurity (see Table I)
S	about 0.03 or less	0.008	impurity (see Table I)
Cr	about 15 - about 35	21.07	about 19 to about 24
Ni	about 1 - about 3	2.58	up to about 3
N	about 0.05 - about 0.6	0.23	about 0.12 to about 0.26
Fe + impurities	balance	balance	balance

Element	Claim 15	US 3,736,131
C	about 0.2 or less	up to about 0.06
Si	about 0.4 or less	up to 1.0 maximum
Mn	about 2 - about 4	about 4 to less than 11.0
P	about 0.1 or less	impurity (see Table I)
S	about 0.03 or less	impurity (see Table I)
Cr	about 15 - about 35	about 19 to about 24
Ni	about 1 or less	up to about 3
N	about 0.05 - about 0.6	about 0.12 to about 0.26
Fe + impurities	balance	balance

The austenite fraction generally ranges from 10 to 50%, with Heat No. E specifically containing 65% austenite when in the annealed condition (Table II, Heat No. E). Espy shows that steels having elongations of 48% can be obtained (Table IX), which lies within the claimed range. Given the substantially identical compositions between the claims and prior art, one of ordinary skill in the art would expect steels that lie within ranges common to Espy and the claims and to possess an elongation of 48% or larger when measured under the conditions of the present specification (MPEP § 2112.01). The overlap between the ranges taught in the prior art and recited in the claims creates a *prima facie* case of obviousness (MPEP § 2144.05).

Espy is silent as to the amount of C+N in the austenite phase. Espy does not disclose whether the Md(γ) of the claimed equation is satisfied. However, it is well established that when a material is produced by a process that is identical or substantially identical to that of the claims and/or possesses a structure or composition that is identical or substantially identical to that of the claims, any claimed properties or functions are presumed to be inherent (MPEP § 2112.01). With respect to the C+N amount, the prior art discloses a critical manufacturing step that is identical to that

disclosed by the instant invention. The instant specification discloses that the amount of C+N in the austenite phase is controlled by the chemical composition of the steel as well as the annealing conditions (paragraph [0051]). It is noted that Espy teaches an annealing step that is carried out at 788°C for 4 hours (Table II caption), which lies within the preferred ranges of the instant specification (paragraph [0080]). With respect to the Md(γ) value, the instant specification states that the amount of manganese adjusts the Md(γ) value. Espy teaches an amount of manganese that overlaps the claimed range. Thus, one of ordinary skill in the art would have expected the C+N amount and the Md(γ) value to have been satisfied by the steels of Espy in light of the overlapping annealing and compositional parameters.

Regarding claim 16, Espy teaches that molybdenum and copper may be present in amounts of up to 5% and up to 0.5%, respectively (col. 2, lines 18-24).

3. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Espy, as applied to claims 12 and 15 above, and further in view of Maehara et al. (US 4,721,600).

Regarding claims 18 and 19, Espy does not teach the inclusion of aluminum, calcium, magnesium, and rare earth metals. Maehara et al. teach that the addition of up to 0.1% Al and small amounts of Ca, Mg, and REM (small amounts being interpreted as impurity level) helps to deoxidize the duplex stainless steel (col. 11, lines 17-24). It would have been obvious to one of ordinary skill in the art to have added Al, Ca, Mg,

and REM to the stainless steel of Espy for the purpose of deoxidizing the steel, thereby preventing the formation of harmful voids.

4. Claims 14, 16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Espy in view of Maehara et al., with evidence from Holt ("Uniaxial Tension Testing," *ASM Handbook*, Vol. 8, pp. 124-142)

Regarding claim 14, Espy discloses a dual-phase austenitic-ferritic steel comprising the following elements (abstract; col. 2, lines 6-24):

Element	Claim 14	US 3,736,131 (Heat No. P)	US 3,736,131
C	about 0.2 or less	0.008	up to about 0.06
Si	about 1.2 or less	0.40	up to 1.0 maximum
Mn	about 4 - about 12	8.77	about 4 to less than 11.0
P	about 0.1 or less	0.009	impurity (see Table I)
S	about 0.03 or less	0.008	impurity (see Table I)
Cr	about 15 - about 35	20.93	about 19 to about 24
Ni	about 1 or less	0.20	up to about 3
N	about 0.05 - about 0.6	0.25	about 0.12 to about 0.26
V	0.005 - 0.5	silent	silent
Fe + impurities	balance	balance	balance

The austenite fraction generally ranges from 10 to 50%, with Heat No. P specifically containing 38% austenite in the annealed condition (Table II, Heat No. P). Espy teaches that the elongation of the steel is 47% (TABLE IX, Heat No. P, annealed condition). It is acknowledged that this value does not overlap the claimed range. However, it is well known to one of ordinary skill in the metallurgical arts that the value obtained from measuring percent elongation varies depending on the starting length of the tensile specimen; the shorter the gauge length of the original tensile specimen, the larger the percent elongation calculated (Holt, p. 131, Fig. 14). Given the substantially

identical compositions between the claims and prior art, one of ordinary skill in the art would expect the steel of Espy to possess a ductility value of 48% or larger when measured under the conditions of the present specification (MPEP § 2112.01).

Espy is silent as to the amount of C+N in the austenite phase. Espy does not disclose whether the Md(γ) of the claimed equation is satisfied. However, it is well established that when a material is produced by a process that is identical or substantially identical to that of the claims and/or possesses a structure or composition that is identical or substantially identical to that of the claims, any claimed properties or functions are presumed to be inherent (MPEP § 2112.01). With respect to the C+N amount, the prior art discloses a critical manufacturing step that is substantially identical to that disclosed by the instant invention. The instant specification discloses that the amount of C+N in the austenite phase is controlled by the chemical composition of the steel as well as the annealing conditions (paragraph [0051]). It is noted that Espy teaches an annealing step that is carried out at 788°C for 4 hours (Table II caption), which lies within the preferred ranges of the instant specification (paragraph [0080]). With respect to the Md(γ) value, the instant specification states that the amount of manganese adjusts the Md(γ) value. Espy teaches an amount of manganese that overlaps the claimed range. Thus, one of ordinary skill in the art would have expected the C+N amount and the Md(γ) value to have been satisfied by the steels of Espy in light of the overlapping annealing and compositional parameters.

Espy does not teach the inclusion of vanadium. Maehara et al. teach that the addition of 0.01-5.0% V to duplex stainless steels further enhances their corrosion

resistance (col. 11, lines 7-11). Therefore, it would have been obvious to one of ordinary skill in the art to have added V to the stainless steel of Espy for the purpose of increasing its ability to resist corrosion.

Regarding claim 16, Espy teaches that Cu may be present in a maximum amount of 0.5% and Mo may substitute Cr in amounts of up to 5% (col. 2, lines 18-24).

Regarding claims 18 and 19, Espy does not teach the inclusion of aluminum, calcium, magnesium, and rare earth metals. Maehara et al. teach that the addition of up to 0.1% Al and small amounts of Ca, Mg, and REM (small amounts being interpreted as impurity level) helps to deoxidize the duplex stainless steel (col. 11, lines 17-21). Therefore, it would have been obvious to one of ordinary skill in the art to have added Al, Ca, Mg, and REM to the stainless steel of Espy for the purpose of deoxidizing the steel, thereby preventing the formation of voids.

5. Claims 12, 13, 15, 16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hauser et al. (US 6,096,441).

Regarding claims 12, 13, and 15, Hauser et al. disclose an austenoferritic stainless steel that includes the following elements, in percent by weight (abstract; cols. 6-7):

Element	Claim 12	Claim 15	US 6,096,441
C	about 0.2 or less	about 0.2 or less	not exceed 0.04
Si	about 4 or less	about 0.4 or less	greater than 0.4 to 1.2
Mn	about 10 or less	about 2 - about 4	2 - 4
P	about 0.1 or less	about 0.1 or less	less than 0.1
S	about 0.03 or less	about 0.03 or less	0.030 or less
Cr	about 15 - about 35	about 15 - about 35	18 - 22
Ni	about 1 - about 3	about 1 or less	1 or less

N	about 0.05 - about 0.6	about 0.05 - about 0.6	up to 0.3
Fe + impurities	balance	balance	balance

Element	Claim 13	US 6,096,441
C	0.05 or less	not exceed 0.04
Si	about 1.2 or less	greater than 0.4 to 1.2
Mn	about 2 or less	2 - 4
P	about 0.1 or less	less than 0.1
S	about 0.03 or less	0.030 or less
Cr	about 15 - about 35	18 - 22
Ni	0.9 or less	1 or less
N	about 0.05 - about 0.6	up to 0.3
Fe + impurities	balance	balance

The microstructure is 30-70% austenite (abstract; col. 2, lines 18-21). The elongation is greater than 35% (col. 3, lines 59-62). The overlap between the ranges taught in the prior art and recited in the claims creates a *prima facie* case of obviousness (MPEP § 2144.05).

Hauser et al. are silent as to the amount of C+N in the austenite phase. Hauser et al. do not disclose whether the Md(γ) of the claimed equation is satisfied. However, it is well established that when a material is produced by a process that is identical or substantially identical to that of the claims and/or possesses a structure or composition that is identical or substantially identical to that of the claims, any claimed properties or functions are presumed to be inherent (MPEP § 2112.01). With respect to the C+N amount, the prior art discloses a critical manufacturing step that is identical to that disclosed by the instant invention. The instant specification discloses that the amount of C+N in the austenite phase is controlled by the chemical composition of the steel as well as the annealing conditions (paragraph [0051]). It is noted that Hauser et al. teach

an annealing step that is carried out at 1040°C for one minute (col. 3, lines 39-41), which lies within the preferred ranges of the instant specification (paragraph [0080]). With respect to the Md(γ) value, the instant specification states that the amount of manganese adjusts the Md(γ) value. Hauser et al. teach an amount of manganese that overlaps the claimed range. Thus, one of ordinary skill in the art would have expected the C+N amount and the Md(γ) value to have been satisfied by the steels of Hauser et al. in light of the overlapping annealing and compositional parameters.

Regarding claim 16, Hauser et al. teach that molybdenum and copper are present in amounts of up to 3% and 0.05-4%, respectively (abstract; col. 8, lines 5, 10).

Regarding claim 18, Hauser et al. teach aluminum in an amount of 0.010-0.030% (col. 8, lines 24-26).

Regarding claim 19, Hauser et al. teach that calcium and boron are present in amounts of 0.0005-0.0020% and 0.0005-0.0030%, respectively (col. 8, lines 27-32).

6. Claims 14, 16, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hauser et al. in view of Maehara et al.

Regarding claim 14, Hauser et al. disclose an austenoferritic stainless steel that includes the following elements, in percent by weight (abstract; cols. 6-7):

Element	Claim 14	US 6,096,441
C	about 0.2 or less	not exceed 0.04
Si	about 1.2 or less	greater than 0.4 to 1.2
Mn	about 4 - about 12	2 - 4
P	about 0.1 or less	less than 0.1
S	about 0.03 or less	0.030 or less
Cr	about 15 - about 35	18 - 22
Ni	about 1 or less	1 or less

N	about 0.05 - about 0.6	up to 0.3
V	0.005 - 0.5	silent
Fe + impurities	balance	balance

The microstructure is 30-70% austenite (abstract; col. 2, lines 18-21). The elongation is greater than 35% (col. 3, lines 59-62). The overlap between the ranges taught in the prior art and recited in the claims creates a *prima facie* case of obviousness (MPEP § 2144.05).

Hauser et al. are silent as to the amount of C+N in the austenite phase. Hauser et al. do not disclose whether the Md(γ) of the claimed equation is satisfied. However, it is well established that when a material is produced by a process that is identical or substantially identical to that of the claims and/or possesses a structure or composition that is identical or substantially identical to that of the claims, any claimed properties or functions are presumed to be inherent (MPEP § 2112.01). With respect to the C+N amount, the prior art discloses a critical manufacturing step that is identical to that disclosed by the instant invention. The instant specification discloses that the amount of C+N in the austenite phase is controlled by the chemical composition of the steel as well as the annealing conditions (paragraph [0051]). It is noted that Hauser et al. teach an annealing step that is carried out at 1040°C for one minute (col. 3, lines 39-41), which lies within the preferred ranges of the instant specification (paragraph [0080]). With respect to the Md(γ) value, the instant specification states that the amount of manganese adjusts the Md(γ) value. Hauser et al. teach an amount of manganese that overlaps the claimed range. Thus, one of ordinary skill in the art would have expected

the C+N amount and the Md(γ) value to have been satisfied by the steels of Hauser et al. in light of the overlapping annealing and compositional parameters.

Hauser et al. do not teach the inclusion of vanadium. Maehara et al. teach that the addition of 0.01-5.0% V to duplex stainless steels further enhances their corrosion resistance (col. 11, lines 7-11). Therefore, it would have been obvious to one of ordinary skill in the art to have added V to the stainless steel of Hauser et al. for the purpose of increasing its ability to resist corrosion.

Regarding claim 16, Hauser et al. teach that molybdenum and copper are present in amounts of up to 3% and 0.05-4%, respectively (abstract; col. 8, lines 5, 10).

Regarding claim 18, Hauser et al. teach aluminum in an amount of 0.010-0.030% (col. 8, lines 24-26).

Regarding claim 19, Hauser et al. teach that calcium and boron are present in amounts of 0.0005-0.0020% and 0.0005-0.0030%, respectively (col. 8, lines 27-32).

Response to Arguments

7. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

With respect to Applicant's arguments that Espy does not teach C+N in the austenite phase, upon further reconsideration, Espy would appear to implicitly teach the C+N amount in view of the overlapping composition and annealing conditions, as described in further detail, supra.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vanessa Velasquez whose telephone number is 571-270-3587. The examiner can normally be reached Monday-Friday 9:00 AM-6:00 PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached at 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vanessa Velasquez/
Examiner, Art Unit 1733
/Scott Kastler/
Primary Examiner, Art Unit 1733